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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|--------------------------|-------------------------------|------------------|
| 10/805,869 | 03/22/2004 | Joseph Gerard Birmingham | BIRM3002/TJM | 1786 |
| 23364 | 7590 | 02/12/2008 | | |
| BACON & THOMAS, PLLC 625 SLATERS LANE FOURTH FLOOR ALEXANDRIA, VA 22314 | | | EXAMINER KURTZ, BENJAMIN M | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1797 | |
| | | | MAIL DATE | DELIVERY MODE |
| | | | 02/12/2008 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/805,869 | Applicant(s) BIRMINGHAM ET AL. | |
| | Examiner BENJAMIN KURTZ | Art Unit 1797 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 11-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 11-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1-7 and 11-23 are pending, claims 8-10 are cancelled and claims 11-23 are new.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claim 22 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Applicant only mentions micro-pillars in relation to the current invention in paragraph 32 of the disclosure. It is unclear what structural relationship the micro-pillars have in the sheets and what the micro-pillars do. The description is non-enabling because the applicant has not provided sufficient information as to the function of the micro-pillars or how they are constructed in the system. Furthermore, the micro-pillars have not been depicted in the figures to show any such relationship or function. Claim 22 has not been rejected over prior art because it is not clear what structure, function, or relationship is being claimed, which makes it impossible to relate it to any prior art.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 11-14 and 16-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Spencer US 3 900 629.

Regarding claim 1, Spencer teaches a microimpactor system comprising a fluid conduit having a plurality of spaced-apart rows of microimpactors arranged in the fluid conduit substantially transverse to a main direction of flow of fluid through the fluid conduit, wherein each of said rows of microimpactors is formed by a microimpactor sheet (12) having a plurality of openings (14) in the sheet that define in each such sheet at least one line of two or more microimpactors, wherein each of said rows of microimpactors is in the plane of the sheet (fig. 1, 2).

Regarding claims 2-5, Spencer further teaches microimpactors in at least two successive rows are offset from each other (fig. 2); microimpactors in successive rows are spaced apart at a distance defined by one or more spacer sheets (12) interposed between the successive sheets of microimpactors (fig. 2); the fluid conduit includes a fluid inlet and a fluid outlet and each of said sheets is a flat sheet (fig. 2); and the system further comprises means for moving fluid through the system (fig. 2, col.1, line

9-11) which performs the identical function in substantially the same way with substantially the same results as the fans or pumps disclosed herein.

Regarding claims 11-13 and 18-20, Spencer teaches a microimpactor system comprising a fluid conduit having a plurality of spaced-apart rows of microimpactors arranged in the fluid conduit substantially transverse to a main direction of flow of fluid through the fluid conduit, wherein each of said rows of microimpactors is formed by a microimpactor sheet (12) having a plurality of openings (14) in the sheet that define in each such sheet at least one line of two or more microimpactors, wherein each of said rows of microimpactors is in the plane of the sheet and a spacing between the rows of microimpactors is ~51 microns (the thickness of a sheet (12) is the spacing between sheets as shown in fig. 2) (fig. 1, 2, col. 2, lines 56-60).

Regarding claims 14, 16 and 17, Spencer further teaches the microimpactors (the strips) are ~254 microns wide (col. 2, lines 56-60); and the spacing between adjacent microimpactors is ~89 microns (col. 2, lines 56-60).

Regarding claim 21, Spencer teaches a microimpactor system comprising: a first microimpactor sheet (12), a second microimpactor sheet (12), and a first spacer sheet (12) between the first and second microimpactor sheets, wherein the first microimpactor sheet is rigid and comprises a first row that comprises a first spacing (14), a first microimpactor (16), a second spacing (14), a second microimpactor (16) and a third spacing (14), wherein the first and second microimpactors are in the plane of the first microimpactor sheet and wherein the second microimpactor sheet is rigid and comprises a second row that comprises a fourth spacing (14), a third microimpactor

(16), a fifth spacing (14), and a fourth microimpactor (16) and a sixth spacing (14), wherein the third and fourth microimpactors are in the plane of the second microimpactor sheet and wherein the first through sixth spacings define a fluid conduit (fig. 1, 2).

3. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Uram US 4 721 567.

Regarding claim 1, Uram teaches a microimpactor system comprising: a fluid conduit having a plurality of spaced apart rows of rigid microimpactors (12) arranged in the fluid conduit substantially transverse to a main direction of flow, wherein each of the rows of microimpactors is formed by a microimpactor sheet (11) having a plurality of openings (13) in the sheet defined in each such sheet at least one line of two or more microimpactors, wherein each of the rows of microimpactors is in the plane of the sheet (fig. 1).

Regarding claims 2-5, Uram further teaches at least two successive rows are offset from each other (fig. 1); microimpactors in successive rows are spaced apart at a distance defined by one or more spacer sheets (41) interposed between the successive rows of microimpactors (fig. 15); the fluid conduit includes a fluid inlet and outlet and each sheet is a flat sheet (fig. 1); the microimpactor system further includes a means, gravity, for moving fluid through the system, which performs the same function in substantially the same way as the fan or pumps disclosed herein, in that fluid passes through the system (col. 1, lines 5-13).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Spencer '629.

Regarding claim 15, Spencer teaches the microimpactor being 254 microns but not 10-150 microns wide. The only difference between the prior art and the invention as claimed in a recitation of relative dimension. [W]here the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device, *Gardner v. TEC Systems, Inc.*, 220 USPQ 777 (1984).

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Spencer '629 in view of Stevens US 3 633 751.

Regarding claim 6, Spencer teaches the microimpactor system of claim 1 but does not teach a means for applying an electrical charge to at least one microimpactor sheet. Stevens teaches a microimpactor system comprising a means for applying an

electrical charge to at least one microimpactor sheet (col. 3, lines 9-20) which performs the identical function in substantially the same way with substantially the same results as the electrical circuitry disclosed herein. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the electrical charge because is can shake the microimpactor sheet to release any adherent material (col. 3, lines 9-20).

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Spencer '629 in view of Stevens '751 as applied to claim 6 above, and further in view of Carr US 3 999 964.

Regarding claim 7, Spencer in view of Stevens teaches the microimpactor system of claim 6 but does not teach means upstream from the microimpactor sheets for applying an electrical charge to particles borne in a fluid transported through the fluid conduit. Carr teaches a filter system where the particles in a fluid are charged upstream of the filter device (col. 2, line 64 – col. 3, line 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the upstream charging of particles as taught by Carr because the charge enhances the particles adherence to the collector (col. 1, lines 22-31).

7. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Spencer '629 in view of Uram '567.

Regarding claim 23, Spencer further teaches the first spacer sheet has a first thickness of 51 microns, each of the first, second and third spacing is 89 microns, each of the first and second microimpactor sheets has a thickness of 51 microns (col. 2, lines 56-60). Spencer does not teach each of the first and second microimpactors having a width of about 10-150 microns or the third and fourth microimpactor having a width different from the first width and the fourth, fifth and sixth spacing having a different spacing than the first, second and third spacing.

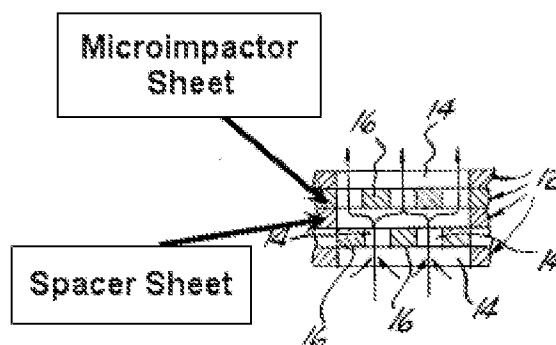
Spencer teaches the first and second microimpactors having a width of 254 microns. The only difference between the prior art and the invention as claimed in a recitation of relative dimension. [W]here the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device, *Gardner v. TEC Systems, Inc.*, 220 USPQ 777 (1984).

Uram teaches a microimpactor having microimpactor sheets with different spacing sizes than other sheets. (col. 3, lines 58-68). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use different widths and spacing as taught by Uram because it provides successive filtering layers where different sized particles are trapped at different layers of the filter, this feature being well known in the filter art.

Response to Arguments

8. Applicant's arguments filed 1/8/08 have been fully considered but they are not persuasive.

Applicant has argued that the sheets of Spencer '629 are not spaced apart. As shown in figure 2, there are microimpactor sheets (containing microimpactors (16)) separated by a different layer (12).



Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BENJAMIN KURTZ whose telephone number is (571)272-8211. The examiner can normally be reached on Monday through Friday 8:00am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Sample can be reached on 571-272-1376. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Benjamin Kurtz
Examiner
Art Unit 1797

2/8/08 /BK/

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Primary Examiner, Art Unit 1797